taught by Dauenhauer, in which pressure on diaphragm 14 causes beam 16 to move toward electrode 40. Column 3, lines 14-17. Provided on the leading end of beam 16 is another resistor 30 that, as beam 16 moves in response to the diaphragm deflection, is urged against electrode 40. As the pressure exerted by resistor 30 against electrode 40 increases, "the contact area between thin-film resistor 30 and metal electrode 40 spreads out along the axis of beam 16, starting at the center of beam 16." Column 3, lines 20-23.

In the opinion of the Examiner, Dauenhauer teaches the deformation of a first measuring element (30, 40, 16). Nevertheless, Dauenhauer never expressly states that beam 16 is deformable; instead, as quoted above, Dauenhauer states that a contact area between elements 30 and 40 spreads out as the pressure transmitted through beam 16 increases. Just because a pressure through beam 16 increases does not mean that beam 16 is deformed in response to the increased pressure.

For the sake of argument, however, Applicants shall assume that the Examiner is correct in stating that one or more of elements 30, 40, and 16 is deformable in response to a deformation of diaphragm 14. According to the Examiner, one of ordinary skill in the art would have been motivated at the time of Applicants' invention to "include the elements as taught by Dauenhauer et al., since Dauenhauer et al. teaches using the arrangement for accurately determining the pressure difference in the structure." Office Action at page 3. Applicants respectfully disagree with this reasoning. Indeed, Applicants cannot tell from this statement whether the Examiner believes that modifying the device of Kleven in view of the device of Dauenhauer would improve the pressure-measuring accuracy of the Kleven device, or whether the modification would merely maintain whatever accuracy the Kleven device already provided before the modification. If the motivation to combine that the Examiner intended to articulate is that the device of Dauenhauer presents an equally viable alternative to the pressure sensing elements of Kleven, then why would one of ordinary skill in the art bother to make a modification that resulted in no improvement? If, on the other hand, the Examiner believes that the modification of Kleven would result in a more accurate vortex pressure sensor, the Examiner provides

no evidence explaining why the device of Dauenhauer, which has nothing to do with the measurement of vortex pressure, would enhance the vortex pressure measuring capacity of the Kleven device.

Indeed, were one of ordinary skill in the art to make the proposed modification, the result would be a degradation in the performance of the Kleven device. As seen in Figure 8 of Kleven, the vortex that is being measured causes the beam 115 to sway side-to-side in the direction of arrows 102. If the Examiner's proposed modification were to be implemented, then the axial, downward displacement of beam 115 due to the downward deformation of diaphragm 118 would, assuming the downward pressure on diaphragm 118 ever became large enough, which Applicants do not concede, result in the axial deformation of beam 115. Since beam 115 is piezoelectric, any deformation, whether from axial or lateral deformation, would produce an electrical signal over line 125 that would be read out as a measurement. Since a vortex pressure in the device of Figure 8 causes only the side-to-side motion represented by arrows 102, it is only that type of pressure that should be permitted to cause a deformation in beam 115 in order to yield an accurate reading of the vortex pressure. Any other type of deformation of beam 115, including the axial kind that would result from the Examiner's proposed modification, would cause the device of Figure 8 to produce an extraneous reading that is irrelevant to the true vortex pressure, the measurement of which is the object of this device. In effect, by allowing beam 115 to become deformed in the axial direction, the device of Figure 8 will produce an output signal that at least in part is determined by non-vortex forces, thus degrading the accuracy of the resulting measurement. For instance, if in addition to swaying in the direction of arrows 102, the beam 115 also deforms in its axial direction, the resulting signal sent over line 125 would have two components: one would correspond to the vortex pressure and the other, extraneous one would correspond to the axial deformation. Thus, what would otherwise have been an accurate measurement of the vortex pressure becomes, due to the axial deformation introduced by the Examiner's modification, a degraded measurement. Because of this degraded performance, one of ordinary skill in the art would not have been motivated

to modify Kleven in the manner proposed by the Examiner. Moreover, because the purpose of joining beam 115 to diaphragm118 in Figure 8 of Kleven is to limit the effect of axial movement on beam 115 (column 6, line 67, to column 7, line 3), Kleven expressly teaches away from the modification proposed by the Examiner. Accordingly, withdrawal of this rejection is respectfully requested.

In fact, the diaphragm 118 according to Fig. 8 of Kleven is not the sensing diaphragm of the vortex sensor. Instead, the diaphragm 118 shall reduce the effect of axial movement of the isolated beam section 101B on the bimorph output as the sensing beam 101 pivots in use (see column 6, line 67 to column 7, line 3). Therefore, in order to get accurate measurement results, the deformation of the first measuring element or beam 115 shall not be responsive to the deformation of the diaphragm 118 of the vortex sensor. Therefore, the skilled person would not make the measuring element or beam 115 of Kleven responsive to a deformation of diaphragm 118 when he considers the teaching of Dauenhauer et al.

Further, the only deformable measuring element disclosed by Dauenhauer et al. is the diaphragm 14 with the thin-film resistor 30 thereon (see Figs. 4a and 4b of Dauenhauer et al.). Since the deformable measuring element of Dauenhauer is the diaphragm itself, it is not responsive to the deformation of a diaphragm. On the other hand, if the diaphragm 14 of Dauenhauer is regarded as the diaphragm sealing the interior chamber, there is no additional deformable first measuring element coupled thereto, that is responsive to the deformation of the diaphragm 14. In fact, Dauenhauer et al. does not teach at all the deformation of a first measuring element being responsive to the deformation of a diaphragm, since the deformable first measuring element is the diaphragm itself.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleven in view of Dauenhauer and United States Patent No. 5,317,917 to Dufour ("Dufour"). Applicants submit that claim 7 is patentable for at least the same reasons given in support of the patentability of claim 1. In addition, claim 7 recites that the arrangement includes a piezoresistor connected to a Wheatstone bridge. What the Examiner has established in relying on Dufour is the use in a pressure transducer of a

Wheatstone bridge made up of piezoresistive gauges, but the Examiner has not shown a piezoresistor connected to such a Wheatstone bridge. Accordingly, because Dufour merely shows a Wheatstone bridge in a pressure transducer, and not a piezoresistor connected to the Wheatstone bridge, Applicants submit that claim 7 is patentable over the combination of Kleven and Dufour.

Applicants assert that the present invention is new, non-obvious, and useful. Consideration and allowance of the claims are requested.

Respectfully submitted,

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